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| 09/046,118 | 03/20/1998 | CHARLES E. BOICE | EN998027 | 1827 |

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| EXAMINER | |
|---|---|
| WONG, ALLEN C | |
| ART UNIT | PAPER NUMBER |
| 2613 | |

DATE MAILED: 01/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/046,118 | Applicant(s) BOICE ET AL. | |
|---|---|---|---|
| | Examiner Allen Wong | Art Unit 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11/22/02* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,7,8,10-28 and 31-41* is/are rejected.

7)☒ Claim(s) *3-6,9,29 and 30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Continued Prosecution Application*

1. The request filed on 11/22/02 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/046,118 is acceptable and a CPA has been established. An action on the CPA follows.

### *Response to Arguments*

2. Applicant's arguments with respect to claims 1, 19, 23, 34 and 37 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 7, 8, 10-28 and 31-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reininger (5,426,463) in view of Astle (5,751,861) in view of Pearlstein (5,568,200).

As for claim 23, Reininger discloses a system for encoding a sequence of video frames comprising:

a pre-encode processing unit (fig.2, element 25), said pre-encoding processing unit comprising:

a statistics measurement unit for use in determining prior to encoding whether a current frame of the sequence of frames comprises a still frame, said

still frame comprising a frame with content substantially identical to content of a preceding frame (fig.2, element 28 counts the number of bits that allows the determination of whether a current frame of the sequence of frames comprises a still frame or I-picture among other preceding frames; also note element 28 is inside the forward analyzer 25, and that the data obtained by the forward analyzer is used for determining proper coding iterations of each frame prior to encoding);

a control unit (fig.2, element 27; note the processor modifies at least the quantization, element 14) for modifying at least one controllable parameter (parameter being bit allocation or quantization step size) employed in encoding said still frame (ie. I-picture) between still frames of a sequence of still frames when said statistics measurement unit determines said current frame to comprise said still frame; and

an encoding engine (fig.2, element 15 is a encode engine that encodes said current frame of the sequence of video frames using the at least one controllable encode parameter set by the pre-encode processing unit, element 25) for encoding said current frame of the sequence of video frames using the at least one controllable encode parameter set by said pre-encode processing unit.

Although Reininger does not disclose the limitation "minimize after decoding thereof, visually perceptible pulsation artifacts between still frames of a sequence of still frames", Astle discloses the elimination of the block edge artifacts (ie. pulsation artifacts) after the decoding of a series of encoded still frames or images (col.6, lines

25-47). Astle acknowledges the existence of these "artifacts" during the decoding process of a series of encoded still frames and also provides a means to eliminate these "artifacts". Astle discloses that, more often that not, a block from the reference picture that matches with the current block will not line up along the boundaries into which pictures are tiled, encoded and decoded. In other words, when decoding image data, a still frame or a still macroblock at time t (where t is any given integer) will match, or have identical information, with a still frame or a still macroblock at time t+1. But there would be block edge artifacts or discrepancies when the still macroblock at time t match up with the still macroblock at time t+1. However, in order to eliminate these "artifacts" after decoding the series of encoded still images, Astle teaches the concept of "selective filtering" to eliminate these artifacts in potentially artifactual or problematic areas without wasting processing time and without removing important video data content (col.6, lines 51-60). Therefore, it would have been obvious to one of ordinary skill in the art to take the teachings of Reininger and Astle, as a whole, for expunging encoding/decoding distortions and errors so as to produce superior-quality images for display while maintaining at a highly efficient encoding rate.

Although Reininger and Astle do not disclose the limitation "to disable motion estimation and limit motion compensation", however, Pearlstein teaches the disablement of motion compensation and limiting motion compensation (in col.8, lines 41-58, Pearlstein discloses that the use of a refresh control processor which utilizes a refresh descriptor data for inhibiting frame display until an appropriate amount of non-erroneous image data develops for decoding; further, in col.9, lines 6-19, Pearlstein

discloses that until an appropriate amount of non-erroneous image data is constructed, the image data is refreshed meaning that previous image data is repetitiously sent until the complete reference frame is constructed, thus, stopping motion estimation and limiting motion compensation until non-erroneous image data is constructed so as to display clear, high quality image data). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Reininger, Astle and Pearlstein, as a whole, for ceasing motion estimation and limiting motion compensation so as to enable high quality display of image data at the decoding end and to encode with precision and high efficiency. Doing so would meet with today's highly complex video encoding standards.

Note claims 1, 2, 14, 19, 20, 31, 34, 35, 37, 38 and 41 have similar corresponding elements.

Regarding claims 7, 8, 24 and 25, Reininger discloses that still picture (ie. I frame), P frame or B frame types can be determined (col.6, lines 47-54; note fig.2, element 28 counts the amount of data and makes a frame-type determination from the amount of data acquired by the counter of the pre-encoding unit, element 25).

Regarding claims 10, 26 and 39, Reininger discloses that a predictive error can be determined by the "predict" section as shown in fig. 2, element 19.

Regarding claims 11-13, 15-18, 21, 22, 27, 28, 36 and 40, Reininger discloses an I frame adaptive quantization table (fig.4), a P frame adaptive quantization table (fig.6), and a B frame adaptive quantization table (fig.5) for adaptively adjust the quantizing unit's step size so that an appropriately encoding bit rate can be used depending on the

type of frame that is being determined so to avoid encoding inaccuracies or "pulsation artifact." Also, Reininger discloses that the pre-encoding unit's processor in figure 2, element 27 is used for the purpose of determining an appropriate quantization level so that a proper bit rate can be employed for encoding (col.6, lines 58-67 and col.7, lines 1-27).

***Allowable Subject Matter***

Claims 3-6, 9, 29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen Wong whose telephone number is (703) 306-5978. The examiner can normally be reached on Mondays to Thursdays from 8am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on (703) 305-4856. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Allen Wong
Examiner
Art Unit 2613

AW
January 9, 2003

CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600